

REMARKS

Claims 1-3 and 12, 13, and 17 were pending in the current application. Applicants have amended claim 1. Reexamination and reconsideration of all of the claims are respectfully requested.

Applicants appreciate the time spent by the Examiner in discussing this case with Applicants' representative and the guidance suggested by the Examiner.

Applicants initially wish to focus on two distinct aspects of claim 1 not presented in the cited references. First, none of the cited references, and no reference presented, illustrates a design wherein "when the first and second conductors are connected at a second end of the cable to an AC power supply *equal currents flow in opposite directions* through adjacent portions of the first and second conductors..." (claim 1, emphasis added). No equal currents flowing in opposite directions as claimed is shown in the Mills reference or any other reference presented. Second, claim 1 recites "wherein the separation layer is formed such that the separation layer has a negative temperature characteristic, and the first conductor is formed such that the first conductor has a positive temperature characteristic..." The Mills reference shows a design employing an element having a positive temperature characteristic in one embodiment and a separate embodiment showing a completely different element having a negative temperature characteristic. Combining the two embodiments simply would not operate. Thus the cited Mills reference fails to show a separation layer having a negative temperature characteristic as claimed and a first conductor having a positive temperature characteristic.

35 U.S.C. § 103

The Office Action rejected claims 1-13, 2, 13, and 17 under 35 U.S.C. §103 based on Mills, U.S. Patent 4,677,281 ("Mills") in view of Gordon Jr., U.S. patent 3,222,497 ("Gordon Jr.") in further view of Sopory, U.S. Patent 6,492,629 ("Sopory").

Mills

“...equal currents flow in opposite directions...”

FIG. 2 of Mills shows a single heating element 12 and a separate sensor wire 14, where sensor wire 14 is a twin core sensor cable comprising wires 15 and 16 separated by NTC (negative temperature characteristic) material 17. FIG. 3 illustrates a single heating element 12' and a PTC (positive temperature characteristic) sensor wire 14'.

Applicants note that nowhere in Mills is any disclosure wherein when first and second conductors are connected at a second end of a cable to an AC power supply *equal currents flow in opposite directions through adjacent portions of the first and second conductors* as required by the express language of claim 1. Equal currents do not flow in opposite directions in either of the FIG. 2 or FIG. 3 embodiments of Mills when connected to an AC power supply as claimed. To the extent currents are discussed at all with respect to the FIG. 2 or FIG. 3 embodiments of Mills, such discussions are limited to alternating current being provided and interrupted under certain conditions (Mills, col. 4, ll. 15-19; col. 5, ll. 17-22), and operation of the “Quadrac,” in the form of switches 25 and 26, “which can...conduct current in either direction, and be triggered for conducting current in either direction by the application of gate signals.” Mills, col. 4, ll. 29-37. What is not said about the “Quadrac,” and what is not true about the Quadrac, is the existence of *equal currents flowing in opposite directions* through adjacent portions of a first conductor and second conductor, as claimed in claim 1.

Providing equal currents in opposite directions along the heating wires (first conductor and second conductor) as claimed provides for a low EMF cable, a desirable aspect of the present design. EMF, and specifically low EMF, is nowhere discussed in Mills, nor is it apparent how such operation could be performed in the Mills arrangement, nor how the Mills arrangement could offer low EMF operation. Further, the sensor wire of Mills, namely sensor wire 14, must carry some amount of current and will therefore generate EMF, possibly or even likely out of phase with the heating element current, thereby further increasing EMF. In short, and with respect to the claim language

employed, the Mills design does not disclose or suggest *equal currents flowing in opposite directions* through adjacent portions of a first conductor and second conductor, nor is it apparent how the Mills reference could be modified to provide such claimed functionality.

Furthermore, in FIG. 2 of Mills, sensor cable 12 and heating cable 14 are not coupled together, or connected in series or in parallel, but instead are separate. In FIG. 3 of Mills sensor cable 12' and heating cable 14' are connected in parallel. Neither embodiment meets the requirement of claim 1 that the first and second conductors are "connected in series" and equal currents flow in opposite directions when connected to an AC power supply.

"...separation layer has a [NTC]... first conductor has a [PTC] ..."

Applicants further dispute that Mills shows a design "wherein the separation layer is formed such that the *separation layer has a negative temperature characteristic*, and the first conductor is formed such that the *first conductor has a positive temperature characteristic*." Applicants specifically note that the heating cable is claimed to comprise "a first conductor which extends along the length of the cable[,] a second conductor which extends along the length of the cable [and] a separation layer which extends along the length of the cable and is interposed between the first and second conductors ...". Thus the cited reference must show a cable having a first conductor and a separation layer each extending along the length of the cable, the first conductor having a positive temperature characteristic (PTC) and the separation layer having a negative temperature characteristic (NTC). Mills simply does not disclose or suggest such a cable.

Mills shows an embodiment (FIG. 2) including a component of NTC material 17, and a separate embodiment, FIG. 3, including a PTC sensor 14', but no embodiment showing a first conductor and a separation layer each extending along the length of the cable, the first conductor having a PTC and the separation layer having a NTC.

Mills does show a PTC resistive component in the controller/control housing 20 (separate from heating element 12 and sensor wire 14) in FIG. 2, but this resistive component does not extend “along the length of the cable” as claimed. Mills presumably provides NTC material 17 with sensor wire 14 to control heating of the bedcover heating element. In contrast, FIG. 3 shows PTC sensor wire 14’ instead of the NTC material 17 of FIG. 2. The FIG. 3 circuit includes PTC resistor 34’, but no NTC component is present in the FIG. 3 embodiment.

The Mills sensor wire thus EITHER includes NTC material 17 (Mills, col. 4, ll. 10-14, FIG. 2) OR a PTC resistance wire (Mills, col. 6, ll. 29-34, FIG. 3). Two different and separate circuits are provided by the two embodiments of Mills to control the sensor wire depending on whether the sensor wire contains an NTC material (FIG. 2) or a PTC resistance wire (FIG. 3).

Looking at the final limitation of claim 1, as amended, “wherein the separation layer is formed such that the separation layer has a negative temperature characteristic, and the first conductor is formed such that the first conductor has a positive temperature characteristic”, nowhere in Mills is it suggested or explained how the two separate Mills sensing wire implementations (FIG. 2 and FIG. 3) could be combined to produce a cable or wire having the combined NTC and PTC properties claimed. The NTC circuit (FIG. 2) operates in the embodiment of FIG. 2 based on the NTC being an insulator at low temperatures. The PTC circuit (FIG. 3) relies on the PTC being a conductor at low temperatures. *The two Mills circuits are mutually exclusive*, and it is neither suggested in Mills nor apparent how a construction as claimed could be formed by using the two mutually exclusive designs of FIGs. 2 and 3 of Mills.

Applicants submit that there is no obvious step or component or circuit that would enable the Mills sensor wire 14’ (PTC) of FIG. 3 to be combined with the Mills NTC material 17 of FIG. 2 into a cable having the combined NTC and PTC properties claimed. Such a combination would require a very different control circuit than either circuit shown in Mills,, and furthermore, sensing wires operate at a much lower current level

than heating wires in this type of application, and mere substitution of s sensing wire for a heating wire would not operate properly and would be damaged by the higher currents produced.

Further, with respect to two mutually exclusive designs being disclosed in a single reference, and recognizing that the present rejection is based on obviousness, Applicants note that the reference must disclose the claimed invention in as much detail as is recited in the claim. See, MPEP 2131; *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (“The identical invention must be shown in as complete detail as is contained in the ... claim.”); see also, *In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000). The elements must be arranged as required by the claim. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). “Concepts do not anticipate. Notions of concept, essence, or gist are no more useful in the context of §102 [the U.S. novelty requirement] than elsewhere, because they divert the factfinder’s attention from the subject matter as a whole.” Harmon, Patents and the Federal Circuit, Sixth Edition, § 3.2a. “It is therefore error to treat the claims as a mere catalog of separate parts, in disregard to part-to-part relationships set forth in the claims that give those claims meaning.” *Id.*

Here, identity of invention is not satisfied; the cited Mills reference does not show a design comprising a first conductor extending along a length of a cable, a second conductor extending along a length of a cable, and a separation layer extending along the length of the cable, wherein the separation layer is formed such that the separation layer has a negative temperature characteristic, and the first conductor is formed such that the first conductor has a positive temperature characteristic. Thus identity of invention is not satisfied, and the present rejection cannot be maintained.

Gordon Jr.

Regarding Gordon Jr., Gordon Jr. discloses only the use of separate sensor and heating wires (*see, e.g.*, Gordon, Jr., col. 1, ll. 60-63). The sensor wire comprises two spirals separated by a layer of NTC material (*see* column 4, ll. 43-54). Gordon Jr. fails to

show that “when the first and second conductors are connected at a second end of the cable to an AC power supply equal currents flow in opposite directions through adjacent portions of the first and second conductors...” Further, the Gordon Jr. reference fails to disclose a separation layer and first conductor as claimed, i.e. having a NTC and PTC, respectively.

The Office Action relies on Gordon Jr. to reject the “sensor wire” recited in claim 1. Office Action, p. 7. Applicants are confused by this citation, as Mills discloses a sensor wire, and it is unclear what aspects of Gordon Jr. and the “sensor wire” are being relied upon in the Office Action. In any event, Applicants submit that Gordon Jr. in combination with Mills fails to show the invention claimed in claim 1, as amended, as both references are missing “equal currents flow in opposite directions” and NTC and PTC operation as claimed in claim 1.

Sopory

Sopory discloses a variety of different materials (PTC, NTC, ZTC) that may be laminated onto an etched foil layer and used for heating. The Office Action seeks to combine this Sopory design with the disclosure of Mills and the Gordon Jr. “sensor wire.”

Sopory is not relied upon to reject the “equal currents flow in opposite directions” limitation of claim 1. As a result, the combination of Mills, Gordon Jr., and Sopory does not render claim 1 obvious, as claim 1, as amended, includes a limitation (“equal currents flowing in opposite directions...”) not found in the cited references, alone or in combination. Claims depending from claim 1 are also not obvious as they include limitations not found in the cited references.

Further, Applicants note that the PTC/NTC/ZTC design of Sopory is “laminated onto an etched foil layer,” and is a fundamentally different design from that presented in the present application. Sopory, col. 2, ll. 49-52. The Sopory design does not demonstrate a first conductor extending along a length of a cable, a second conductor

extending along a length of a cable, and a separation layer extending along the length of the cable, wherein the separation layer is formed such that the separation layer has a negative temperature characteristic, and the first conductor is formed such that the first conductor has a positive temperature characteristic. Again, it is not obvious how the lamination of PTC and NTC materials onto an etched foil layer could be made into a cable as claimed, specifically a first conductor and a separation layer having the properties claimed. Such a combination would require a very different construction than the laminated etched foil layer shown in Sopory. Insertion of the Sopory design into Gordon Jr. and/or Mills would simply not operate in an appropriate manner.

Regarding the combination of Mills and Sopory with respect to the language of amended claim 1, in FIG. 2 of Mills, sensor cable 12 and heating cable 14 are not coupled together, but are separate. In FIG. 3 of Mills, sensor cable 12' and heating cable 14' are connected in parallel. Neither embodiment meets the requirement of claim 1 that the first and second conductors are "connected in series" and equal currents flow in opposite directions when connected to an AC power supply. Again, Sopory fails to cure this deficiency.

Thus Applicants submit that the combination of Mills and the fundamentally different Sopory design are missing limitations from claim 1, as amended, and for this reason claim 1 is nonobvious in view of the cited references. Claims depending from claim 1 are allowable as they include limitations not found in the cited references.

Applicants thus also dispute the combination of Mills, Gordon Jr., and Sopory. It is only through the use of hindsight that a construction such as that claimed may be achieved by employing Gordon Jr. and Sopory to fill in the gaps of Mills.

The PTO has the burden of establishing a prima facie case of obviousness under 35 USC §103. The Patent Office must show that some reason to combine the elements with some rational underpinning that would lead an individual of ordinary skill in the art to combine the relevant teachings of the references. *KSR International Co. v. Teleflex Inc.*, No. 04-1350, 550 U.S. ____ (2007); *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir.

1988). Therefore, a combination of relevant teachings alone is insufficient grounds to establish obviousness, absent some reason for one of ordinary skill in the art to do so. *Fine* at 1075. In this case, the Examiner has not pointed to any cogent, supportable reason that would lead an artisan of ordinary skill in the art to come up with the claimed invention.

None of the references, alone or in combination, teaches the unique features called for in the claims. It is impermissible hindsight reasoning to pick a feature here and there from among the references to construct a hypothetical combination which obviates the claims.

It is impermissible, however, simply to engage in a hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps. [*citation omitted*]

In re Gordon, 18 USPQ.2d 1885, 1888 (Fed. Cir. 1991).

A large number of devices may exist in the prior art where, if the prior art be disregarded as to its content, purpose, mode of operation and general context, the several elements claimed by the Applicant, if taken individually, may be disclosed. However, the important thing to recognize is that the reason for combining these elements in any way to meet Applicant's claims only becomes obvious, if at all, when considered from hindsight in the light of the application disclosure. The Federal Circuit has stressed that the "decisionmaker must step backward in time and into the shoes worn by a person having ordinary skill in the art when the invention was unknown and just before it was made." *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1566 (Fed. Cir. 1987). To do otherwise would be to apply hindsight reconstruction, which has been strongly discouraged by the Federal Circuit. *Id.* at 1568.

To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against

its teacher.

W.L. Gore & Assoc. v. Garlock, Inc., 721 F.2d 1540, 1553 (Fed. Cir. 1983). Therefore, without some reason in the references to combine the cited prior art teachings, with some rational underpinnings for such a reason, the Examiner's conclusory statements in support of the alleged combination fail to establish a prima facie case for obviousness. *See, KSR International Co. v. Teleflex Inc.*, No. 04-1350, 550 U.S. ____ (2007) (obviousness determination requires looking at "whether there was an apparent reason to combine the known elements in the fashion claimed...", citing *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness," KSR at 14).

The Office Action fails to meet this burden. Although the Office Action tries to describe how one skilled in the art would have been motivated to modify the Mills design to employ the Gordon Jr. sensor wire using the Sopory PTC/ZTC/NTC materials laminated onto an etched foil layer, these attempts fall short.

The motivation to combine references is said to be "to protect [the] electrical circuit for the heating cable of Mills..." Office Action, p. 8. This is not a motivation to combine, but a generalized statement of the function performed by the current invention. It is disingenuous and overly simplistic to say that a combined design could "protect" an electrical circuit – the benefit of the present design, as stated in the specification, is to improve temperature control of the cable to protect the user. Protection of the control circuit is merely a general statement that could apply to any electrical device having a control circuit. Alternative designs are always desirable. However, it is dismissive and overly simplistic to say that just because a beneficial function or quality could be achieved using an alternate design that one of ordinary skill would have been motivated to create such a design. There has been no reason, with specific factual underpinnings, supporting the combination of Mills, Gordon Jr., and Sopory.

The Office Action fails to avoid the effects of hindsight reasoning in fashioning the combination of Mills, Gordon Jr., and Sopory, presents no reasons having rational underpinnings in support of the combination, and for these further reasons claims 1-3, 12-13, and 17 are allowable over Mills in view of Gordon Jr. and in further view of Sopory.

Based on the foregoing, independent claim 1, as amended, is not obvious based on Mills in view of Gordon Jr. and in further view of Sopory. All claims depending from independent claim 1, as amended, are allowable as they include limitations not found in the cited references, alone or in combination.

Applicants therefore respectfully submit that all claims, as amended, are allowable under 35 U.S.C. § 103.

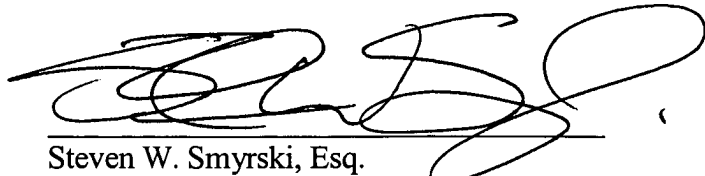
CONCLUSION

In view of the foregoing, it is respectfully submitted that all claims of the present application are in condition for search and Examination. Examination and consideration of all of the claims are respectfully requested and allowance of all the claims at an early date is solicited.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Applicants believe that no fees are required with the present response. Should it be determined for any reason an insufficient fee has been paid, please charge any insufficiency to ensure consideration and allowance of this matter to Deposit Account 502026.

Respectfully submitted,



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